Ambient Air Temperature Reading In Instrument Cluster (IC) Is Different From The Reading in Premium Tech Tool (PTT); Outside Temperature Prevents Guided Diagnostics (GD) Operations For the Exhaust Aftertreatment System (EATS) From Being Perfo

Internal Content

Overview

The Ambient Air Temperature signal is monitored by the Instrument Cluster. The Cluster provides a live reading on the Driver Information Display (DID) and should reflect the current outside air temperature.

Modules that require the ambient tempurature reading, namely the Engine Management System (EMS), receive the value from the instrument cluster via the J1939 Data Link. Premium Tech Tool reads the Ambient Temperature value from the EMS.

To prevent false readings due to heat soak at the ambient temperature sensor, the EMS will lock the ambient temperature value when coolant temperature exceeds 50°C (122°F). The only point when temperature is updated with coolant and oil temperatures above 50° is after an hour of continuous operation, which occurs along with an engine fan activation. In addition, if the EMS is showing low coolant and oil temperatures and the ambient temperature value changes significantly in a short period of time, the EMS may consider the reading to be incorrect.

If a chassis is pulled into a shop for diagnostic work while the engine is still hot, the EMS may still have the ambient temperature value locked at the temperature the sensor reported when the coolant temp originally exceeded 50°C. Conversely, if a chassis is started cold and immediately pulled into a warm shop, the sudden ambient temperature change when compared to coolant and oil temperature reading and rate of change may cause the EMS to disregard the ambient temperature reading as incorrect.

Resolution

A chassis with a warm engine should be allowed to cool down with engine Off until coolant and oil temperatures drop below 40°C (104°F) before it is pulled into the shop. Lifting the hood will help to

(104°F) before it is pulled into the shop. Lifting the hood will help to accelerate cool down.

A chassis with a cold engine should be allowed to run until coolant and oil temperatures reach 20°C (68°F) before it is pulled into the shop. Engine oil temperature can be monitored from the Driver Information Display (DID) This will put oil and coolant sensor readings at approximately room temperature and the ambient temperature change from being pulled inside will not be considered incorrect.

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